

REMARKS

Claim 20 is rejected under 35 USC 101. Claim 20 has been amended to the form proposed by the Examiner for a claim that is directed to computer/machine-readable instructions and is believed to be directed now to statutory subject-matter.

Claims 1-20 are rejected under 35 USC 103(a) as being unpatentable over Hui *et al.* in view of Gerstacker. The arrangement and method disclosed in Hui *et al.* for iterative channel impulse response estimation starts from the premise that the noise is coloured and relies on whitening filters. Whitening filters introduce delay and may require higher sampling rate. The cost functions of the algorithms of Hui *et al.* could not work if the whitening filter delay is greater than the number of known transmitted symbols minus the length of the estimated channel impulse response.

Present claims 1, 11 and 20 require that “said noise estimate signal comprises a matrix (W) representing the inverse of noise covariance”. The Examiner recognizes that Hui *et al.* does not expressly teach a noise estimate comprising a matrix representing the inverse of the noise covariance but asserts that Gerstacker teaches “estimating the impulse response using the inverse of noise covariance.” Applicant respectfully submits that the passage on page 3 lines 28-55 does not specifically refer to a noise estimate comprising a matrix representing the inverse of the noise covariance and equation 8 is presented merely for analysis.

Combination of Gerstacker with Hui *et al.* would not lead to the invention of present claims 1, 11 and 20 and Gerstacker teaches away from any such combination. The arrangement proposed by Gerstacker assumes the noise to be white (page 3, line 43). This assumption is incompatible with the premise of Hui *et al.* that the noise is coloured. Gerstacker teaches (page 5 lines 16-18): “The assumption of lack of correlation is frequently justified, since taking account of correlations between different coefficients mostly results in only slight gains in the channel estimation. Given the occurrence of white noise and an optimum PSK training sequence, equ. (17) can be transformed” so that there would be no motivation for a reader to combine Gerstacker with Hui *et al.* Iteration is not part of Gerstacker’s teaching, who refers only to a single stage calculation based on a single training sequence, without reference to iteration.

The Applicants have found that Gerstacker's assumption that "taking account of correlations between different coefficients mostly results in only slight gains in the channel estimation" is unjustified and that use of the inverse of the noise covariance matrix enables a significant improvement in channel estimation. This improvement is obtained by, at each iteration step, the computation of one improved estimated channel impulse response (not a plurality). Accordingly the overhead of the calculation is manageable, unlike the use of whitening filters can be, and leads rapidly to a gain in channel estimation. Claims 1, 11 and 20 have been amended to clarify the above distinctions.

Regarding claim 2, the Examiner asserts that Gerstacker teaches that an inverse noise covariance matrix is calculated iteratively. However, Applicant submits that Gerstacker nowhere refers to iteration of his calculation, let alone the computation at each iteration of an inverse noise covariance matrix, that is to say one set of estimated noise samples (not a plurality) at each iteration, as required by present claim 2.

Accordingly, it is submitted that claims 1, 11 and 20 are novel and non-obvious in view of the prior art cited and are allowable. The other claims depend from claim 1, 11 and 20 and are submitted to be allowable at least for this reason.

Although Applicants may disagree with statements made by the Examiner in reference to the claims and the cited references, Applicants are not discussing all these statements in the current Office Action since reasons for the patentability of each pending claim are provided without addressing these statements. Therefore, Applicants reserve the right to address these statements at a later time if necessary.

No amendment made herein is related to the statutory requirements of patentability unless expressly stated herein. Further, no amendment herein is made for the purpose of narrowing the scope of any claim, unless Applicants have argued herein that such amendment was made to distinguish over a particular reference or combination of references.

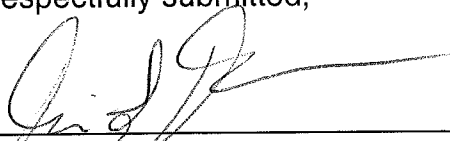
If Applicant has overlooked any additional fees, or if any overpayment has been made, the Commissioner is hereby authorized to credit or debit Deposit Account 503079.

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